

Service Manual



Colour Television TX-15AT1C Z-M3L Chassis

SPECIFICATIONS

Power Source:	220-240V a.c., 50Hz	Video/Audio Terminals:		
Power Consumption:	46W	AV1 IN	Video (21 pin)	1V p-p 75Ω
Stand-by Power Consumption:	1W		Audio (21 pin)	500mV rms 10kΩ
Aerial Impedance:	75Ω unbalanced, Coaxial Type	AV1 OUT	RGB (21 pin)	
Receiving System:	PAL-B/G, H, DK , PAL-525/60 SECAM B/G, D/K M.NTSC NTSC (AV only)		Audio (RCAx1)	500mV rms 10kΩ
			Video (RCAx1)	1V p-p 75Ω
Receiving Channels:		High Voltage:	26.5kV ± 1kV	
VHF E2-E12	VHF H1-H2 (ITALY)	Picture Tube:	A36AKJ13X02E 37cm	
VHF A-H (ITALY)	VHF R1-R2	Audio Output:	3W (Music Power) 8Ω Impedance	
VHF R3-R5	VHF R6-R12	Headphones:	8Ω Impedance 3.5mm	
UHF E21-E68	CATV (S01-S05)	Accessories supplied :	Remote Control 2 x R6 (UM3) Batteries	
CATV S1-S10 (M1-M10)	CATV S11-S20 (U1-U10)			
CATV S21-S41 (HYPERBAND)		Dimensions:		
Intermediate Frequency:		Height:	368mm	
Video/Audio		Width:	388mm	
Video	38.9MHz, 34MHz	Depth:	387mm	
Audio	32.9MHz, 33.16MHz, 33.4MHz			
Colour	34.47MHz (PAL)	Net weight:	11kg	
	34.5MHz, 34.65MHz (SECAM)			

Specifications are subject to change without notice.
Weights and dimensions shown are approximate.

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SAFETY PRECAUTIONS

GENERAL GUIDE LINES

1. It is advisable to insert an isolation transformer in the a.c. supply before servicing a hot chassis.
2. When servicing, observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all parts that have been overheated or damaged by the short circuit.
3. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long period of time, unplug the power cord from the a.c. outlet.
5. Potentials as high as 27.5kV are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

LEAKAGE CURRENT COLD CHECK

1. Unplug the a.c. cord and connect a jumper between the two prongs of the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered a.c. plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts etc. When the exposed metallic part has a return path to the chassis, the reading should be between 4M ohm and 20M ohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

1. Plug the a.c. cord directly into the a.c. outlet. Do not use an isolation transformer for this check.
2. Connect a $2k\Omega$ 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an a.c. voltmeter with high impedance to measure the potential across the resistor.

4. Check each exposed metallic part and check the voltage at each point.
5. Reverse the a.c. plug at the outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 1.4Vrms. In case a measurement is outside the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

HOT CHECK CIRCUIT

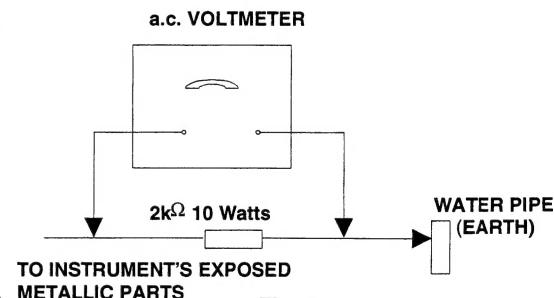


Fig. 1.

X-RADIATION WARNING

1. The potential sources of X-Radiation in TV sets are the high voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that the jig is capable of handling 27.5kV without causing X-Radiation.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

1. Set the brightness to minimum.
2. Measure the high voltage. The meter should indicate $26.5kV \pm 1kV$. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
3. To prevent any X-Radiation possibility, it is essential to use the specified tube.

SERVICE HINTS

How to remove the rear cover

1. Remove the 5 screws as shown in Fig.2.

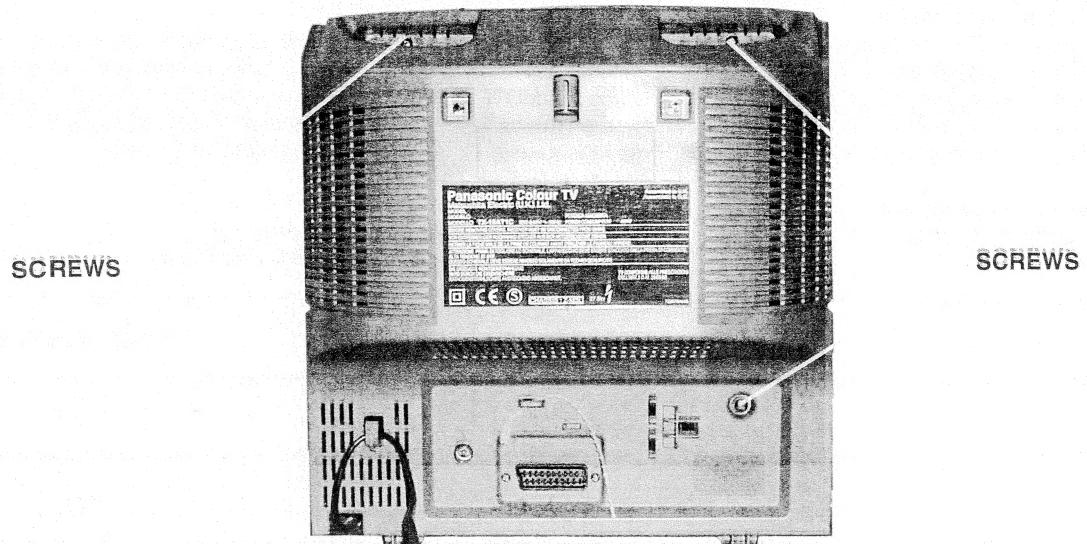
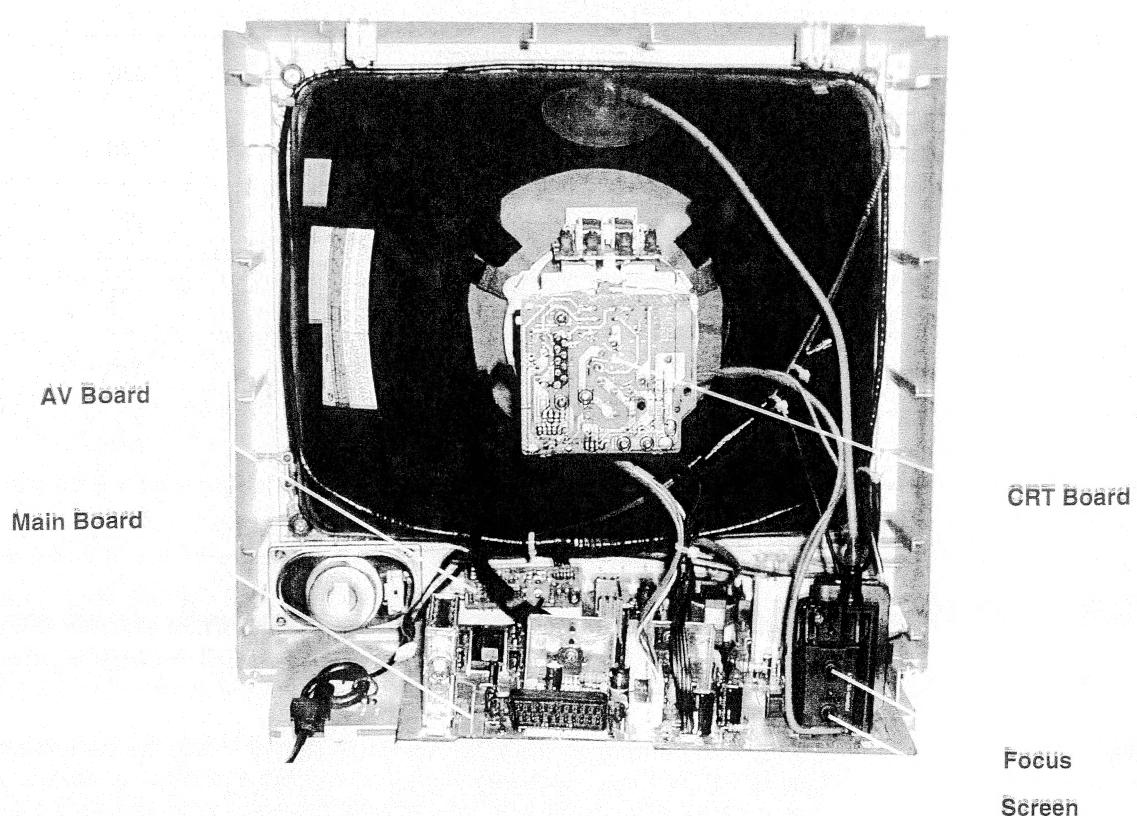


Fig. 2.

LOCATION OF CONTROLS



ALIGNMENT PROCEDURE AND OPTION SETTING

(The figures below are nominal and used for representative purposes only.)

Entering SERVICE mode

To enter the On-Screen display adjustment, adjust the unit to channel 99, select the sharpness setting using the function (F) button. Set the sharpness to a minimum using the minus button. Press function key again to store the sharpness setting. Then press the DOWN button on the unit whilst pressing the MUTE button on the remote control. Select the adjustment items by the UP/DOWN button on the remote control, then adjust them by the +/- button. After adjustment, be sure to press the TV/AV button to confirm the required values. Press the function key to store all adjustment values

Service mode navigation

- Up /Down remote keys :cycle through the service items available.
- +/- remote keys :Decrement/Increment the values within range.
- TV/AV :Store the current data.

Order	Item	Optimum setting
1	Cut off (UG2)	TEST
2	Vertical slope (V-slo)	031
3	Vertical position (V-pos)	033
4	Vertical amplitude (V-Amp)	029
5	Horizontal position (H-Ctr)	030
6	Red Cut (R-Cut)	035
7	Green Cut (G-Cut)	028
8	Red Drive (R-Drv)	026
9	Green Drive (G-Drv)	037
10	Blue Drive (B-Drv)	029
11	AGC	031
12	Sub-Colour (S-Col)	019
13	Sub-Brightness (S-Bri)	029

Cut Off UG2 alignment:

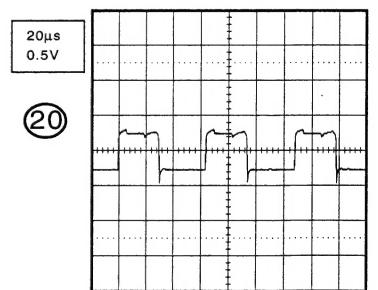
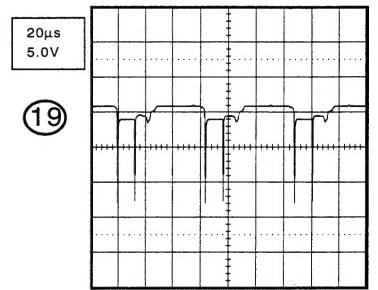
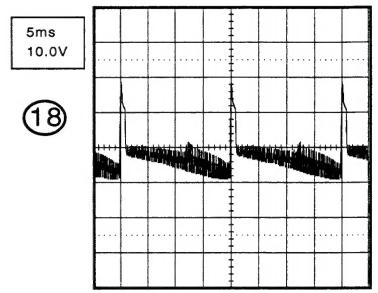
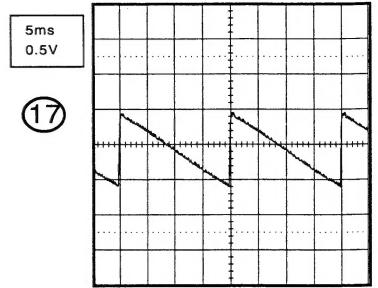
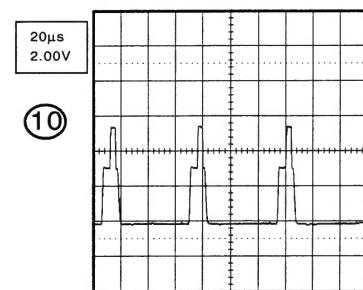
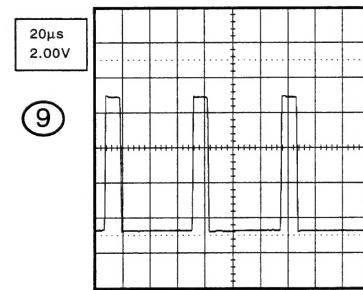
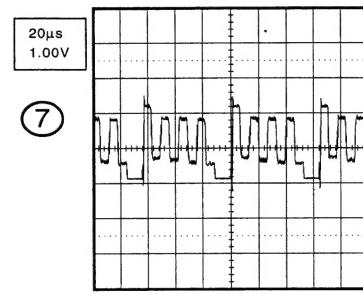
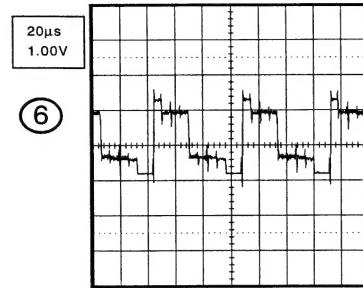
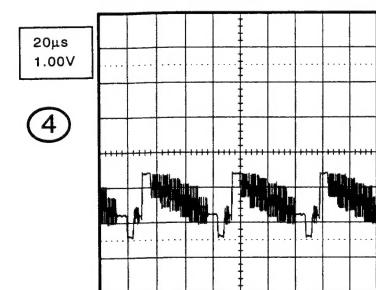
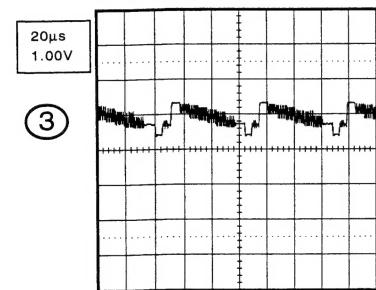
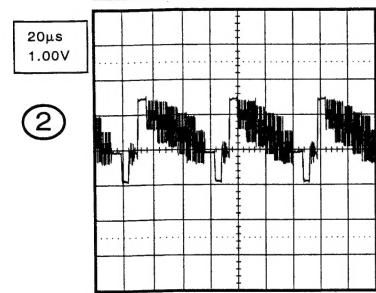
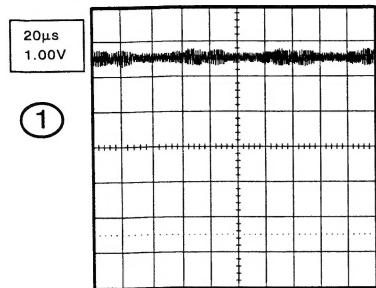
Adjust the unit to the following settings, R-Cut=32, G-Cut=32, R-Drv=32, G-Drv=32, B-Drv=32. Place the set into an ageing test for >15 minutes. Activate the UG2 display adjustment mode. Adjust the SCREEN VOLUME until the indicator on the unit will light up.

White Balance:

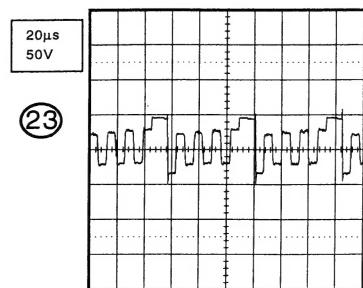
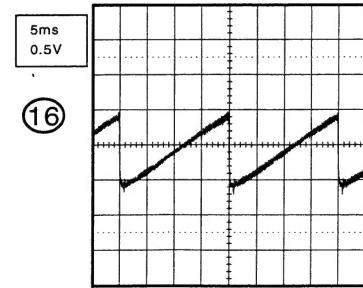
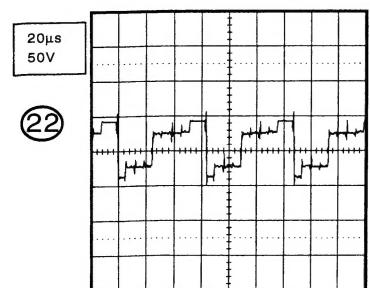
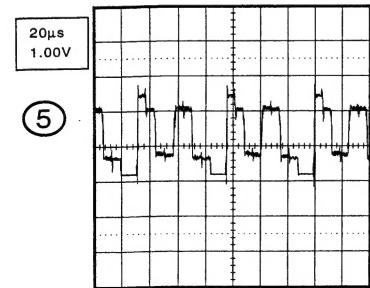
Adjust after performing UG2 CUT OFF adjustment. Place the set into an ageing test for >10 minutes. Receive the gray scale from a pattern generator. Set the colour balance to normal position. Activate the adjustment mode, press the UP/DOWN button on the remote to select R-Cut, G-Cut, R-Drv, G-Drv, and B-Drv and adjust accordingly using +/- button on the remote to whiten. Perform the adjustment until the white colour seems white.

WAVEFORMS

MICON/CHROMA

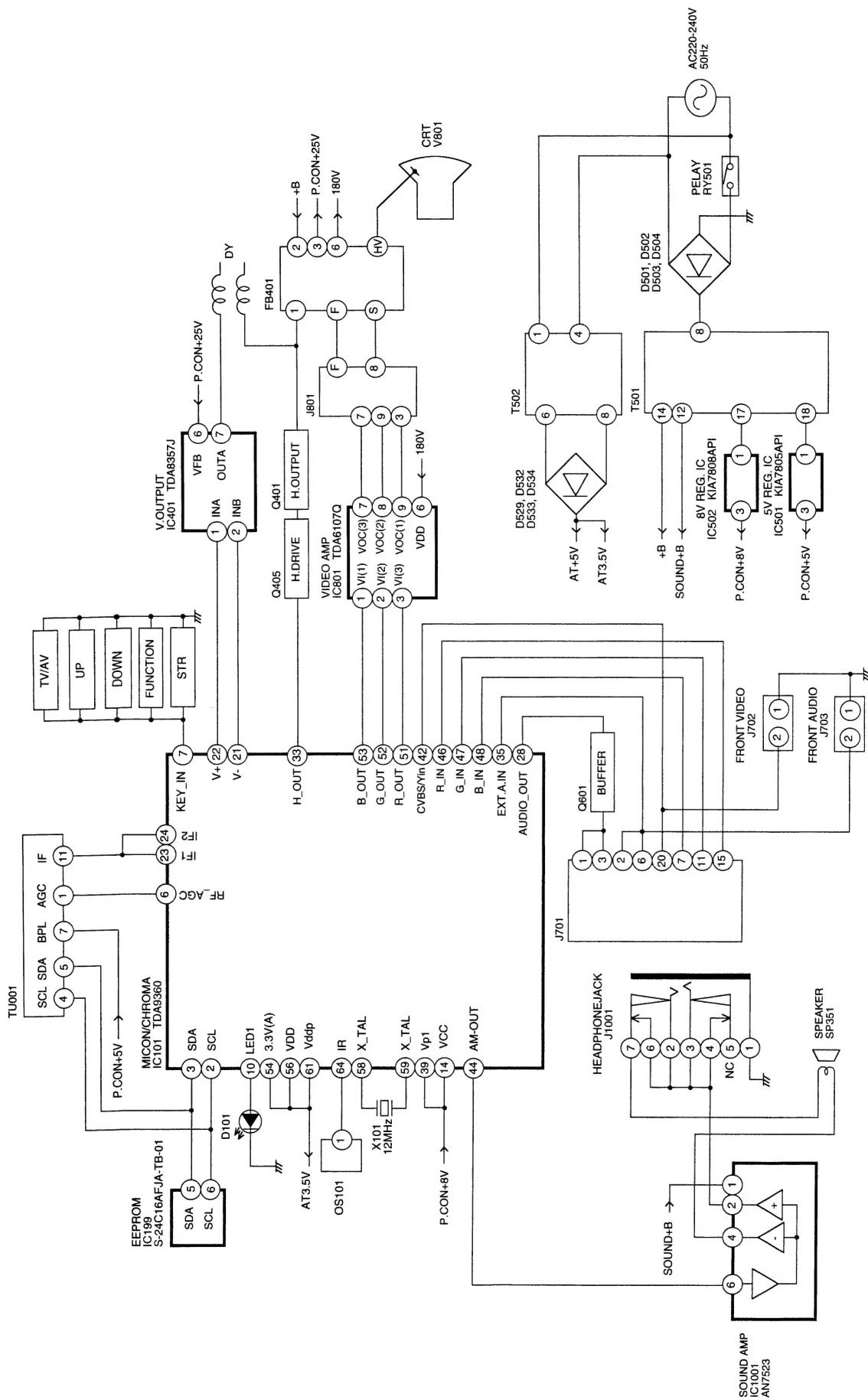


DEFLECTION/CRT



NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagrams. (see pages 13-16)

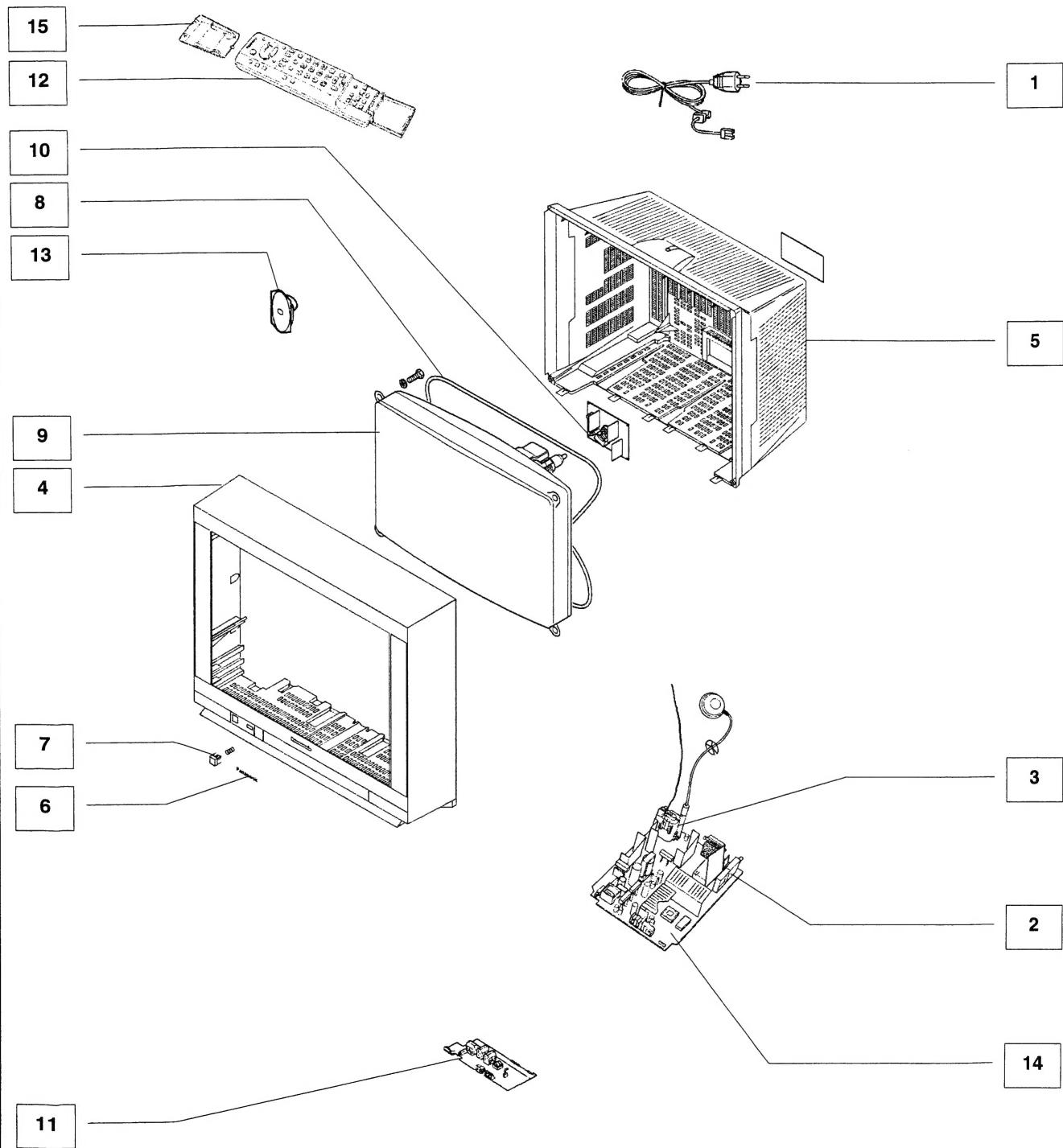
BLOCK DIAGRAM



PARTS LOCATION

NOTE:

The numbers on the exploded view below refer to the mechanical section of the Replacement Parts List. For representation purposes only.



REPLACEMENT PARTS LIST

Important Safety Notice

Components Identified by  mark have special characteristics important for safety.
 * When replacing any of these components, use only manufacturers specified parts.
 In case of ordering these spare parts, please always add the complete Model-Type number to your order.

Cct Ref	Parts Number	Description		Cct Ref	Parts Number	Description				
EXPLODED VIEW										
1	0665A801	AC POWER CORD		D501	D2WTRM11C	DIODE				
2	145517006	TUNER		D502	D2WTRM11C	DIODE				
3	3214035F	FLY BACK TRANSFORMER		D503	D2WTRM11C	DIODE				
4	701UPJ0306	CABINET		D504	D2WTRM11C	DIODE				
5	702UPA0233	BACKCOVER		D505	SB290S	DIODE				
6	7235760001	PANASONIC BADGE		D506	MTZJT-775.6B	DIODE				
7	735UPA0100	POWER BUTTON		D507	MTZJ18BT-77	ZENER DIODE				
8	8R140027	DEGAUSS COIL		D508	SB290S	DIODE				
9	A36AKJ13X02E	CRT		D509	MA165TA5	DIODE				
10	A3L009C110K	CRT P.C.B.		D510	15DF6	DIODE				
11	A3L009C250K	AV P.C.B.		D511	MTZJ18BT-77	ZENER DIODE				
12	EUR511300	REMOTE CONTROL		D512	1N4937	DIODE				
13	S0509F36	SPEAKER		D513	SB290S	DIODE				
14	TMB538A	MAIN P.C.B.		D514	MA165TA5	DIODE				
15	UR51EC904A	BATTERY COVER (REMOTE)		D515	MA165TA5	DIODE				
MISCELLANEOUS COMPONENTS										
	713UPA0022	REMOCON GUIDE		D516	SB290S	DIODE				
	713UPB0003	AV COVER		D517	MA165TA5	DIODE				
	735UPA0099	KEY BUTTONS		D518	MA165TA5	DIODE				
	793UCDA964	CARTON		D519	MA165TA5	DIODE				
	800UF00001	CUSHION LEG		D520	MTZJ18BT-77	ZENER DIODE				
ANT001	125C10802	ANTENNA ROD		D521	MA165TA5	DIODE				
BT001	UM-3DEP-2P	BATTERY PACK		D522	MTZJ3.9BT-77	ZENER DIODE				
CUS011	800WFAA00	CUSHION		D524	SB290S	DIODE				
RY501	ALKS329	RELAY		D525	MA165TA5	DIODE				
I.C.s										
IC101	TDA9360	MICON/CHROMA		D528	MTZJT-775.6B	DIODE				
IC199	X24C1615AT1C	EAROM*		D529	1N4005-EIC	DIODE				
IC401	TDA8357J	VERTICAL AMPLIFIER		D530	MA165TA5	DIODE				
IC501	KIA7805API	5V REGULATOR		D532	1N4005-EIC	DIODE				
IC502	KIA7808API	8V REGULATOR		D533	1N4005-EIC	DIODE				
IC801	TDA6107Q	RGB OUTPUT		D534	1N4005-EIC	DIODE				
IC1001	AN7523	AUDIO AMPLIFIER		D602	MA165TA5	DIODE				
OS101	PIC-37142SY	REMOTE RECEIVER		D603	MA165TA5	DIODE				
FUSES										
F501	50T040HCC	FUSE		D801	AU02A-EIC	DIODE				
DIODES				D802	AU02A-EIC	DIODE				
D001	MTZJT-7733/B	ZENER DIODE		D803	AU02A-EIC	DIODE				
D101	SLR-342VCT32	LED		IC506	LTV-817M-VB	PHOTO COUPLER				
D401	AU02A-EIC	DIODE		TH501	B59104-T80-B	THERMISTOR(PTC)				
D402	AU02A-EIC	DIODE		TRANSISTORS						
D403	MTZJT-7733/B	ZENER DIODE		Q401	2SD2499	TRANSISTOR				
D404	MTZJT-7733/B	ZENER DIODE		Q402	2SA1624	TRANSISTOR				
D406	MTZJ12BT-77	ZENER DIODE		Q405	2SC1627Y	TRANSISTOR				
D407	MA165TA5	DIODE		Q501	KTC3209Y-AT	POWER TRANSISTOR				
D408	MTZJ18BT-77	ZENER DIODE		Q502	KTC3203Y-AT	POWER TRANSISTOR				
D409	AU02A-EIC	DIODE		Q503	KTC3209Y-AT	POWER TRANSISTOR				
D410	MTZJT-776.8B	ZENER DIODE		Q504	2SC2412	TRANSISTOR				
D411	MA165TA5	DIODE		Q505	2SC2412	TRANSISTOR				
D413	AU02A-EIC	DIODE		Q506	KRA102SRTK	SWITCHING TRANSISTOR				
				Q507	KTC3198-ATY	POWER TRANSISTOR				
				Q508	KTC3198-ATY	POWER TRANSISTOR				
				Q509	KTC3209Y-AT	POWER TRANSISTOR				
				Q511	2SK2647-01MR	MOSFET				
				Q512	KRA102SRTK	SWITCHING TRANSISTOR				

Cct Ref	Parts Number	Description				
Q513	KRC102SRTK	SWITCHING TRANSISTOR				
Q601	2SC2412	TRANSISTOR				
Q602	2SC2412	TRANSISTOR				
Q606	2SC2412	TRANSISTOR				
Q607	2SC2412	TRANSISTOR				
Q608	2SA1037AKT14	TRANSISTOR				
Q609	KTC3881S-RTK	POWER TRANSISTOR				
TRANSFORMERS						
T401	ETH14Y47AY	DRIVE TRANSFORMER				▲
COILS						
B502	024HT03564	BEAD CORE				
B504	024HT03553	BEAD CORE				
B1003	024HT03553	BEAD CORE				
L001	EL0305RA100J	COIL				
L101	EL0305RA100J	COIL				
L102	EL0305RA100J	COIL				
L104	EL0305RA100J	COIL				
L401	EL0909RR472K	COIL				
L402	20416A	LINEARITY COIL				
L501	029T00009	COIL				
L502	02AHB9A972	FERRITE CORE				
L503	028R14002	COIL				
L601	EL0305RA100J	COIL				
L602	LAP02TA100J	COIL				
L603	EL0305RA680J	COIL				
L604	021LA6R33M	COIL				
L605	021LA62R2K	COIL				
L701	LAP02TA100J	COIL				
L703	LAP02TA100J	COIL				
L704	LAP02TA100J	COIL				
L705	LAP02TA100J	COIL				
L706	0216S7100J	COIL				
L802	EL0606RA560J	COIL				
FILTERS						
CF601	102E238R9G	FILTER				
CF604	1012T5R507	CERAMIC FILTER				
CF605	MKT40.4MA110	TRAP FILTER				
CF607	1012T03101	CERAMIC FILTER				
CRYSTALS						
X101	HC-49/U-S	QUARTZ OSCILLATOR				
RESISTORS						
R001	ERDS1TJ183	CARBON	0.5W	5%	18K Ω	
R002	ERDS1TJ183	CARBON	0.5W	5%	18K Ω	
R003	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R004	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R005	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R006	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R007	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R008	ERJ6GEYJ123	S.M.CARB	0.1W	5%	12K Ω	
R101	ERJ6GEYJ181	S.M.CARB	0.1W	5%	180 Ω	
R102	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R103	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω	
R104	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R105	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R106	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω	
R107	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R108	ERJ6GEYJ332	S.M.CARB	0.1W	5%	3K3 Ω	
R109	ERD25TJ122	CARBON	0.25W	5%	1K2 Ω	
R110	ERJ6GEYJ333	S.M.CARB	0.1W	5%	33K Ω	
R111	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω	
R112	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R113	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R114	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R115	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R116	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω	

Cct Ref	Parts Number	Description				
R117	ERD25TJ332	CARBON	0.25W	5%	3K3 Ω	
R118	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R119	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R120	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R123	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R124	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R126	ERD25TJ470	CARBON	0.25W	5%	47 Ω	
R401	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R402	ERF2AJ391S	METAL	2W	5%	390 Ω	▲
R403	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R404	ERDS1TJ471	CARBON	0.5W	5%	470 Ω	
R405	ERDS1TJ1R5	CARBON	0.5W	5%	1R5 Ω	
R407	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R408	ERDS1TJ1R5	CARBON	0.5W	5%	1R5 Ω	
R409	ERJ6GEYJ564	S.M.CARB	0.1W	5%	560K Ω	
R410	ERD25TJ562	CARBON	0.25W	5%	5K6 Ω	
R411	ERD25TJ272	CARBON	0.25W	5%	2K7 Ω	
R412	ERD25TJ562	CARBON	0.25W	5%	5K6 Ω	
R413	ERD25TJ104	CARBON	0.25W	5%	100K Ω	
R414	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R415	ERQ1AJW2R0E	FUSIBLE	0.5W	5%	2 Ω	
R419	ERDS1TJ331	CARBON	0.5W	5%	330 Ω	
R423	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R447	ERQ12HJ470P	FUSIBLE	0.5W	5%	47 Ω	▲
R448	ERG1FJ102P	METAL	1W	5%	1K Ω	
R450	ERQ1ABJP5R6S	FUSIBLE	1W	5%	5R6 Ω	▲
R455	ERDS1TJ391	CARBON	1W	5%	390 Ω	
R456	ERX2FJ1R0H	METAL	2W	5%	1 Ω	▲
R460	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R490	ERD25TJ223	CARBON	0.25W	5%	22K Ω	
R501	ERDS2TJ155T	CARBON	0.5W	5%	1.5M Ω	▲
R502	ERX12SJR82P	METAL	0.5W	5%	0.82 Ω	▲
R503	ERF5AK7R5	METAL	5W	10%	7R5 Ω	▲
R504	ERDS1TJ225	CARBON	0.5W	5%	2M2 Ω	
R505	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R506	ERDS1TJ225	CARBON	0.5W	5%	2M2 Ω	
R507	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R508	ERG3FJ330H	METAL	3W	5%	33 Ω	▲
R510	ERQ1CKPR33S	FUSIBLE	1W	10%	0.33 Ω	▲
R511	ERG1FJS331E	METAL	1W	5%	330 Ω	▲
R512	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R513	ERJ6GEYJ152	S.M.CARB	0.1W	5%	1K5 Ω	
R514	ERDS1TJ104	CARBON	0.5W	5%	100K Ω	
R515	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω	
R516	ERD25TJ332	CARBON	0.25W	5%	3K3 Ω	
R519	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R521	ERDS1TJ102	CARBON	0.5W	5%	1K Ω	
R522	ERD25TJ271	CARBON	0.25W	5%	270 Ω	
R523	ERD25TJ100	CARBON	0.25W	5%	10 Ω	
R524	ERD25TJ151	CARBON	0.25W	5%	150 Ω	
R525	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	
R526	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R528	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R529	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R531	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R532	ERD25TJ332	CARBON	0.25W	5%	3K3 Ω	
R533	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R537	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R538	ERD25TJ271	CARBON	0.25W	5%	270 Ω	
R601	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω	
R602	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R603	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R604	ERJ6GEYJ393	S.M.CARB	0.1W	5%	39K Ω	
R605	ERJ6GEYJ271	S.M.CARB	0.1W	5%	270 Ω	
R606	ERJ6GEYJ751	S.M.CARB	0.1W	5%	750 Ω	
R607	ERJ6GEYJ471	S.M.CARB	0.1W	5%	470 Ω	

Cct Ref	Parts Number	Description				
R608	ERJ6GEYJ392	S.M.CARB	0.1W	5%	3K9 Ω	
R609	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R610	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K Ω	
R621	ERJ6GEYJ561	S.M.CARB	0.1W	5%	560 Ω	
R622	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R623	ERJ6GEYJ273	S.M.CARB	0.1W	5%	27K Ω	
R624	ERJ6GEYJ223	S.M.CARB	0.1W	5%	22K Ω	
R625	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R626	ERJ6GEYJ183	S.M.CARB	0.1W	5%	18K Ω	
R627	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R628	ERJ6GEYJ391	S.M.CARB	0.1W	5%	390 Ω	
R629	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R630	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω	
R631	ERDS2TJ4R7T	CARBON	2W	5%	4R7 Ω	
R632	ERD25TJ271	CARBON	0.25W	5%	270 Ω	
R633	ERD25TJ561	CARBON	0.25W	5%	560 Ω	
R634	ERJ6GEYJ561	S.M.CARB	0.1W	5%	560 Ω	
R635	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R636	ERJ6GEYJ470	S.M.CARB	0.1W	5%	47 Ω	
R637	ERJ6GEYJ152	S.M.CARB	0.1W	5%	1K5 Ω	
R638	R4X5T6333F	METAL	0.16W	5%	33K Ω	▲
R639	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R640	ERJ6GEYJ153	S.M.CARB	0.1W	5%	15K Ω	
R641	ERJ6GEYJ221	S.M.CARB	0.1W	5%	220 Ω	
R642	ERJ6GEYJ224	S.M.CARB	0.1W	5%	220K Ω	
R643	ERJ6GEYJ822	S.M.CARB	0.1W	5%	8K2 Ω	
R644	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R645	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R646	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R647	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R648	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R649	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R650	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R651	ERJ6GEYJ681	S.M.CARB	0.1W	5%	680 Ω	
R652	ERJ6GEYJ472	S.M.CARB	0.1W	5%	4K7 Ω	
R653	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R654	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R655	ERJ6GEYJ682	S.M.CARB	0.1W	5%	6K8 Ω	
R656	ERD25FJ820P	CARBON	0.25W	5%	82 Ω	
R657	ERJ6GEYJ331	S.M.CARB	0.1W	5%	330 Ω	
R658	ERDS1TJ221	CARBON	0.5W	5%	220 Ω	
R666	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K Ω	
R701	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R702	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2 Ω	
R703	ERD25TJ334	CARBON	0.25W	5%	330K Ω	
R704	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R706	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R707	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R708	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R709	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R710	ERJ6GEYJ680	S.M.CARB	0.1W	5%	68 Ω	
R711	ERJ6GEYJ104	S.M.CARB	0.1W	5%	100K Ω	
R713	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R714	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R715	ERJ6GEYJ750	S.M.CARB	0.1W	5%	75 Ω	
R717	ERJ6GEYJ473	S.M.CARB	0.1W	5%	47K Ω	
R718	ERD25TJ821	CARBON	0.25W	5%	820 Ω	
R719	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R801	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R802	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R803	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R804	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R805	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R806	ERJ6GEYJ101	S.M.CARB	0.1W	5%	100 Ω	
R807	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R808	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	

Cct Ref	Parts Number	Description				
R809	ERJ6GEYJ102	S.M.CARB	0.1W	5%	1K Ω	
R810	ERQ2CJP470S	FUSIBLE	2W	5%	47 Ω	▲
R1002	ERD25TJ124	CARBON	0.25W	5%	120K Ω	
R1003	ERD25TJ822	CARBON	0.25W	5%	8K2 Ω	
R1004	ERJ6GEYJ103	S.M.CARB	0.1W	5%	10K Ω	
R1009	ERDS1TJ101	CARBON	0.5W	5%	100 Ω	
R1010	ERDS1TJ101	CARBON	0.5W	5%	100 Ω	
VR501	EVNCYAA03B13	VARIABLE	5W	5%	3.13K Ω	
CAPACITORS						
C001	ECUY1H223KBX	CERAMIC	50V	22nF		
C002	ECA0JM471GB	ELECT	6.3V	470μF		
C003	ECEA1HU2R2	ELECT	50V	2R2μF		
C101	ECEAOJU101	ELECT	400V	100μF		
C102	ECUV1E105KBN	CERAMIC	25V	100nF		
C103	ECUV1E105KBN	CERAMIC	25V	100nF		
C104	ECUV1H270JCG	CERAMIC	50V	APA	27μF	
C105	ECUV1H270JCG	CERAMIC	50V	APA	27μF	
C106	ECEAOJU101	ELECT	400V	100μF		
C107	ECUV1E105KBN	CERAMIC	25V	100nF		
C108	ECUV1E105KBN	CERAMIC	25V	100nF		
C109	ECA1CM470B	ELECT	16V	47μF		
C122	ECA1CHG100B	ELECT	16V	10μF		
C401	ECUV1H473KBX	S.M. CAP	50V	47nF		
C402	ECA1VHG102B	ELECT	35V	1pF		
C403	P235W1473J	CAPACITO	100V	47nF		
C404	C0JTB05H3K	CAPACITO	500V	2.2nF		
C405	ECUV1H473KBX	S.M. CAP	50V	47nF		
C406	E5EZT3221M	CAPACITO	25V	220μF		
C407	ECUV1E105KBN	CERAMIC	25V	100nF		
C408	ECKR1H104KB5	CERAMIC	50V	100nF		
C409	E5EZT84R7M	CAPACITO	100V	4.7μF		
C416	C0JTS5K1J	CAPACITO	500V	27pF		
C417	ECWH1H103JS	CAPACITO	100V	10nF		
C418	ECA1HM220GB	ELECT	50V	22μF		
C420	C0JTS5S1J	CAPACITO	500V	56pF		
C422	ECEA2EN2R2B	ELECT	250V	2.2μF		
C423	P447F2274J	CAPACITO	200V	270nF		
C424	P4N8FJ912H	CAPACITO	1.25K	9.1nF		
C425	P4N8FJ222H	CAPACITO	1.25K	2.2nF		
C431	ECEA2EU220	ELECT	250V	22μF		
C432	P235W1104J	CAPACITO	100V	100nF		
C501	ECQU2A104MNB	FILM	250V	100nF	▲	
C502	AMZV-102J	CAPACITO	50V	100μF		
C503	C03L0R7H2K	CAPACITO	2kV	220pF		
C503	C0PLRR7H2K	CERAMIC	2kV	220pF		
C504	AMZV-473J	CAPACITO	50V	47nF		
C505	E52DHJ151M	CAPACITO	450V	150μF		
C506	HS11VJYB102K	CAPACITO	2kV	100nF		
C507	HS11VJYB102K	CAPACITO	2kV	100nF		
C508	ECKD3A102KBN	CERAMIC	250V	1nF	▲	
C509	AMZV-223J	CAPACITO	50V	22nF		
C511	ECA1EHG470	ELECT	25V	47μF		
C513	ECEA1HU010	ELECT	50V	1pF		
C514	ECEA1CU471	ELECT	16V	470μF		
C515	ECA1CHG102B	ELECT	16V	1nF		
C516	C0JTB05Q2K	CAPACITO	500V	470pF		
C517	C03L0R7U2K	CAPACITO	2kV	680pF		
C517	ECKW3D681JBN	CERAMIC	2kV	680pF		
C518	ECUV1H103KBG	CAPACITO	50V	10nF		
C519	ECA1CHG222B	ELECT	16V	2.2nF		
C521	ECA2CHG101E	ELECT	160V	100μF		
C523	ECA1AHG101B	ELECT	10V	100μF		
C526	ECQU2A224MNB	FILM	250V	220nF		
C527	ECKD3A221KBN	CERAMIC	250V	220pF	▲	
C533	ECA0JM471GB	ELECT	6.3V	470μF		
C535	CD39E0MH3	CERAMIC	250V	2.2nF	▲	

Cct Ref	Parts Number	Description		
C541	ECEA1HG102B	ELECT	50V	1nF
C601	ECQV1H224JL3	FILM	50V	220nF
C602	ECA1CHG101	ELECT	16V	100µF
C603	ECUV1E105KBN	CERAMIC	25V	100nF
C604	ECQV1H224JL3	FILM	50V	220nF
C605	ECUV1H222KBN	CERAMIC	50V	2.2nF
C606	CL21B105KONE	CAPACITO	16V	1µF
C607	ECUV1H472KBG	CERAMIC	50V	4.7nF
C608	ECA1CM220B	ELECT	16V	22µF
C609	ECUV1E105KBN	CERAMIC	25V	100nF
C610	ECA1HM4R7	ELECT	50V	4R7µF
C611	ECUV1H102KBN	CERAMIC	50V	1nF
C612	ECUV1H102KBN	CERAMIC	50V	1nF
C613	ECQV1H104J	FILM	50V	100nF
C614	ECUV1H103KBG	CAPACITO	50V	10nF
C615	ECUV1H332KBN	CERAMIC	50V	3.3nF
C616	ECA1HM220GB	ELECT	50V	22µF
C617	ECUV1H331JCG	CERAMIC	50V	330µF
C618	ECUV1H122KBN	CERAMIC	50V	1.2nF
C619	ECEA1HU100	ELECT	50V	10µF
C626	ECEA1HU2R2	ELECT	50V	2R2µF
C627	ECUV1H102KBN	CERAMIC	50V	1nF
C628	ECUV1E105KBN	CERAMIC	25V	100nF
C629	ECA1CM101B	ELECT	16V	100µF
C630	ECUV1E105KBN	CERAMIC	25V	100nF
C631	ECEA1HU100	ELECT	50V	10µF
C632	ECUV1E105KBN	CERAMIC	25V	100nF
C633	ECA1CHG101	ELECT	16V	100µF
C634	ECUV1H473KBX	S.M. CAP	50V	47nF
C635	ECUV1H473KBX	S.M. CAP	50V	47nF
C636	ECUV1H102KBN	CERAMIC	50V	1nF
C637	ECUY1H223KBX	CERAMIC	50V	22nF
C638	ECUY1H223KBX	CERAMIC	50V	22nF
C639	ECUY1H223KBX	CERAMIC	50V	22nF
C640	E02LU5470M	CERAMIC	50V	47µF
C641	ECUV1H222KBN	CERAMIC	50V	2.2nF
C642	ECUV1H561JCX	S.M. CAP	50V	560pF
C646	ECUV1H560JCG	CERAMIC	50V	56µF
C647	ECUV1H560JCG	CERAMIC	50V	56µF
C648	ECUV1H102KBN	CERAMIC	50V	1nF
C649	ECUY1H223KBX	CERAMIC	50V	22nF
C650	ECUV1H103KBG	CAPACITO	50V	10nF
C655	CHG0B0413J	CERAMIC	50V	100nF
C702	ECKR1H102KB5	CERAMIC	50V	1nF
C703	ECUV1H471JCX	S.M. CAP	50V	470pF
C704	ECA1CHG100B	ELECT	16V	10µF
C802	ECUV1H152KBN	CERAMIC	50V	1.5nF
C803	P235WB104K	CAPACITO	100V	100nF
C804	E5EZTD100M	CAPACITO	250V	10µF
C819	C03L0R713K	CAPACITO	2kV	100nF
C1001	ECA0JM471GB	ELECT	6.3V	470µF
C1002	ECEA1HU100	ELECT	50V	10µF
C1003	CHGTX02H3M	CAPACITO	16V	2.2nF
C1004	50NW71MT1	CAPACITO	50V	1µF
C1006	ECA1CM101B	ELECT	16V	100µF
C1007	ECA1CM470B	ELECT	16V	47µF
C1008	ECA1CM470B	ELECT	16V	47µF
C1009	ECUV1H102KBN	CERAMIC	50V	1nF
C1010	CHGTTB0413J	CAPACITO	50V	100nF
C1011	ECA0JM471GB	ELECT	6.3V	470µF
C1012	ECKR1H102KB5	CERAMIC	50V	1nF

TERMINALS AND LINKS

J701	063G100042	SCART SOCKET
J702	AV1-06D-3	RCA JACK
J703	AV1-06D-4	RCA JACK
J801	0350998205	CRT SOCKET

Cct Ref	Parts Number	Description	
J1001	HTJ-035-28A	RCA JACK	
SWITCHES			
SW101	SKHVBED010	SWITCH	
SW102	SKHVBED010	SWITCH	
SW103	SKHVBED010	SWITCH	
SW104	SKHVBED010	SWITCH	
SW105	SKHVBED010	SWITCH	
SW501	SDKVA30100	MAIN SWITCH	▲
MISCELLANEOUS COMPONENTS			
	711UPA0022	I.R. WINDOW	
INSTRUCTION BOOKS			
TQB8E3737A	GERMAN		▲
TQB8E3737B	DUTCH		▲
TQB8E3737C	ITALIAN		▲
TQB8E3737F	SWEDISH		▲
TQB8E3737G	NORWEGIAN		▲
TQB8E3737H	FINNISH(SUOMI)		▲
TQB8E3737J	PORTUGUESE		▲
TQB8E3737K	DANISH		▲

SCHEMATIC DIAGRAMS FOR MODEL TX-15AT1C (Z-M3L CHASSIS)

IMPORTANT SAFETY NOTICE

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturers' specified parts.

NOTE

1. RESISTOR

All resistors are carbon 1/4W resistor, unless marked otherwise.
Unit of resistance is OHM (Ω) ($k=1,000$, $M=1,000,000$)

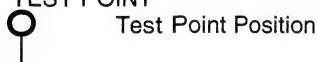
2. CAPACITORS

All capacitors are ceramic 50V unless marked otherwise.
Unit of capacitance is μF unless otherwise stated.

3. COIL

Unit of inductance is μH , unless otherwise stated.

4. TEST POINT



Test Point Position

5. EARTH SYMBOL



Chassis Earth (Cold)



Line Earth (Hot)

6. VOLTAGE MEASUREMENT

Voltage is measured by a d.c. voltmeter.
Measurement conditions are as follows:
Power source a.c. 220V-240V, 50Hz
Receiving Signal Colour Bar signal (RF)
All customer controls Maximum position

7.



Indicates the Video signal path



Indicates the Audio signal path

These schematic diagrams are the latest at time of printing and are subject to change without notice.

REMARKS

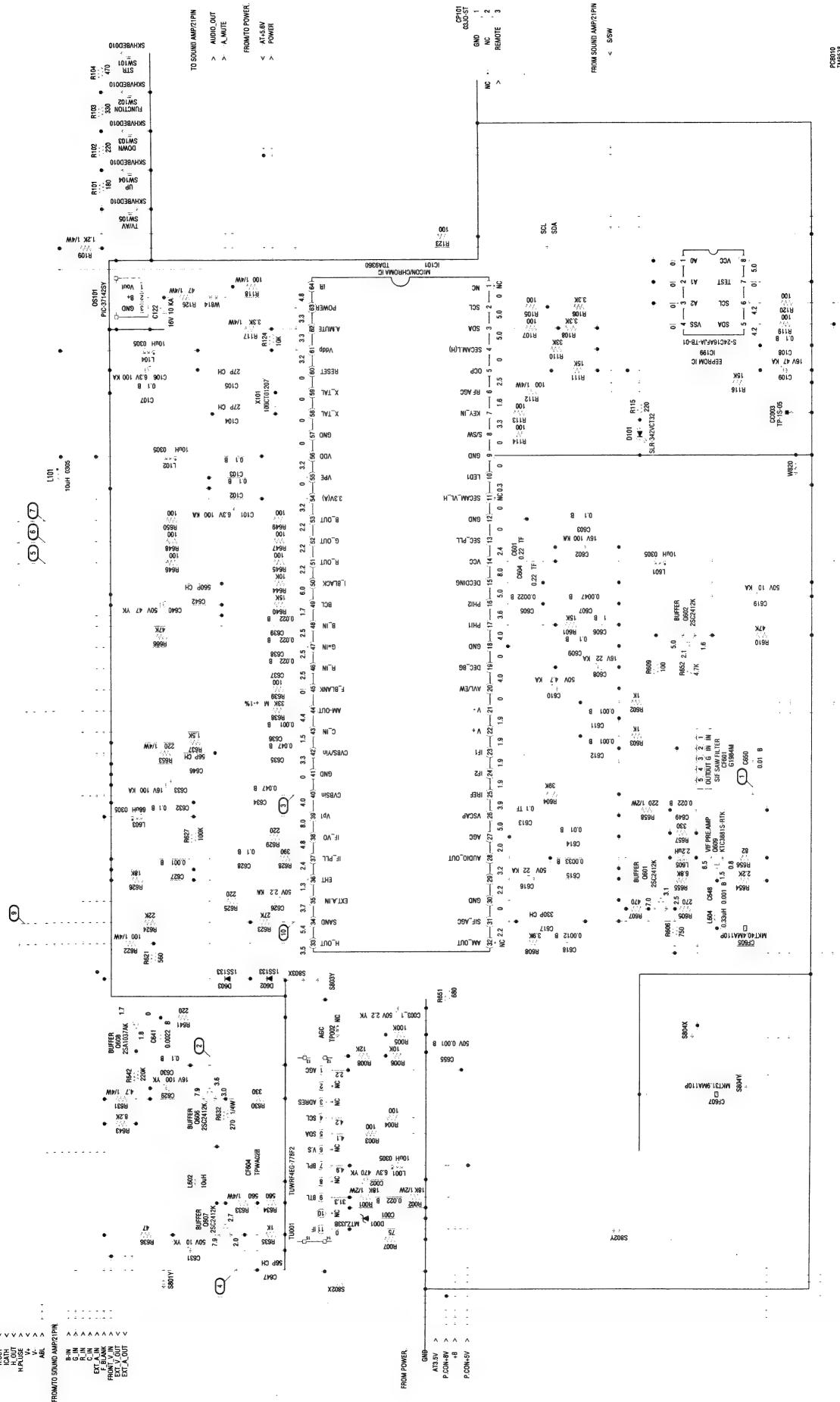
- a. Do not touch the hot part, or the hot and cold parts at the same time, as you are liable to a shock hazard.
- b. Do not short circuit the hot and cold circuits as electrical components may be damaged.
- c. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously as this may cause fuse failure. Connect the earth of the instruments to the earth connection of the circuit being measured.
- d. Make sure to disconnect the power plug before removing the chassis.

NOTE

1. The Power Supply Circuit contains a circuit area, which uses a separate power supply to isolate the earth connection. The circuit is defined by HOT and COLD indications in the schematic diagram. All circuits, except the Power Circuit, are COLD.

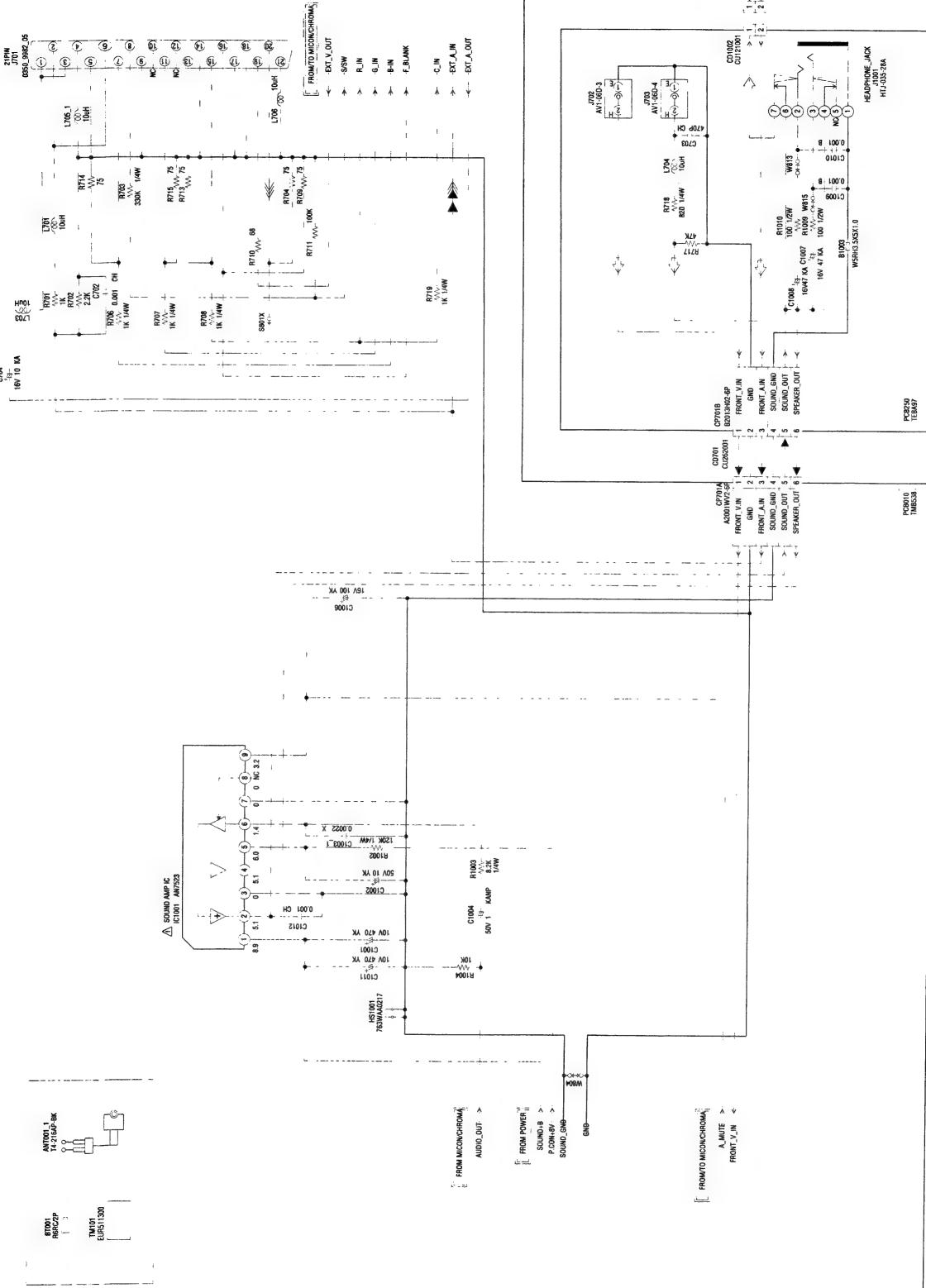
MICON/CHROMA SCHEMATIC DIAGRAM (MAIN PCB)

FROM TO DEFLECTIONCAT

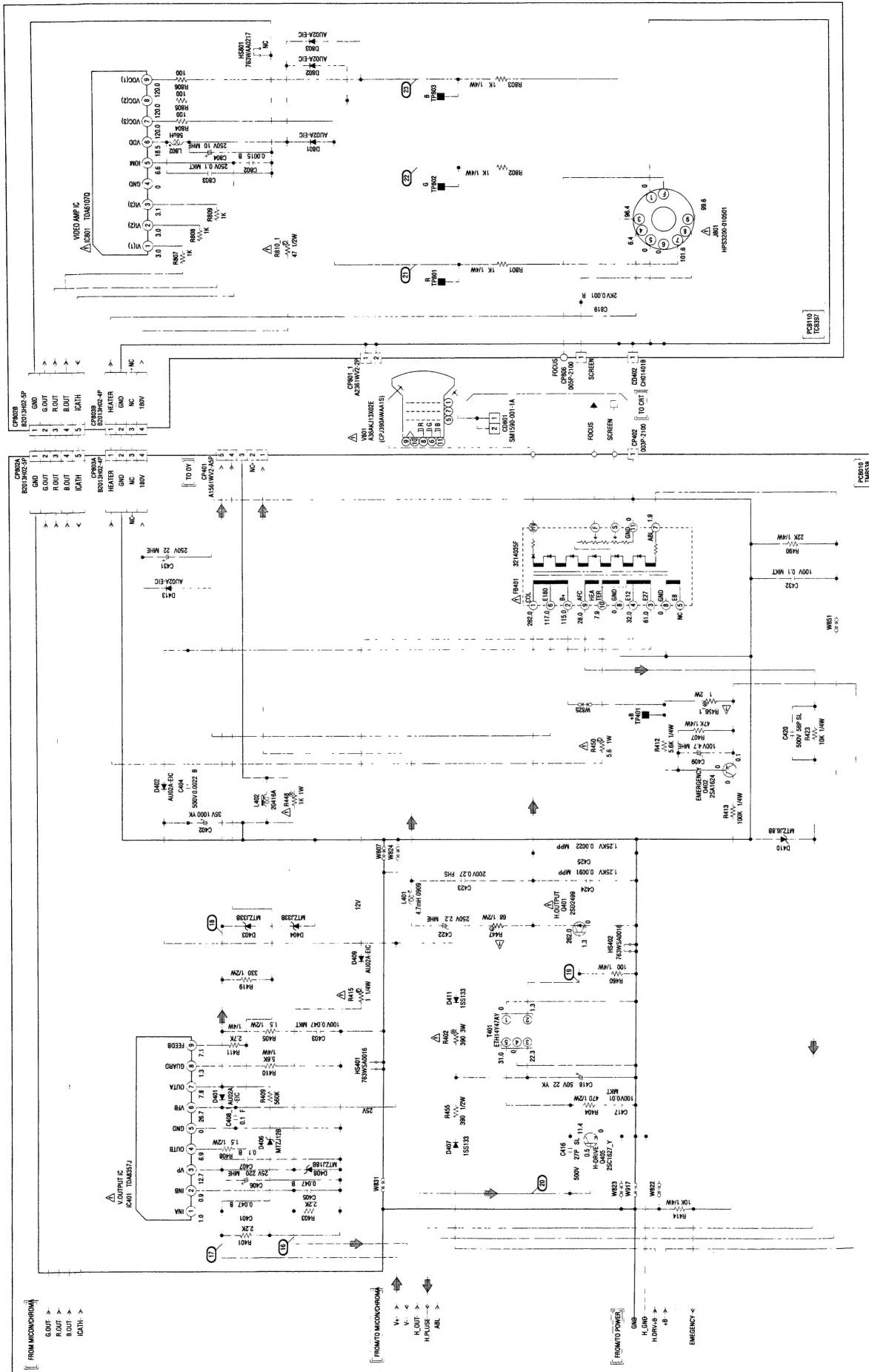


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

SOUND AMP SCHEMATIC DIAGRAM (MAIN PCB)



DEFLECTION/CRT SCHEMATIC DIAGRAM
(MAIN PCB)

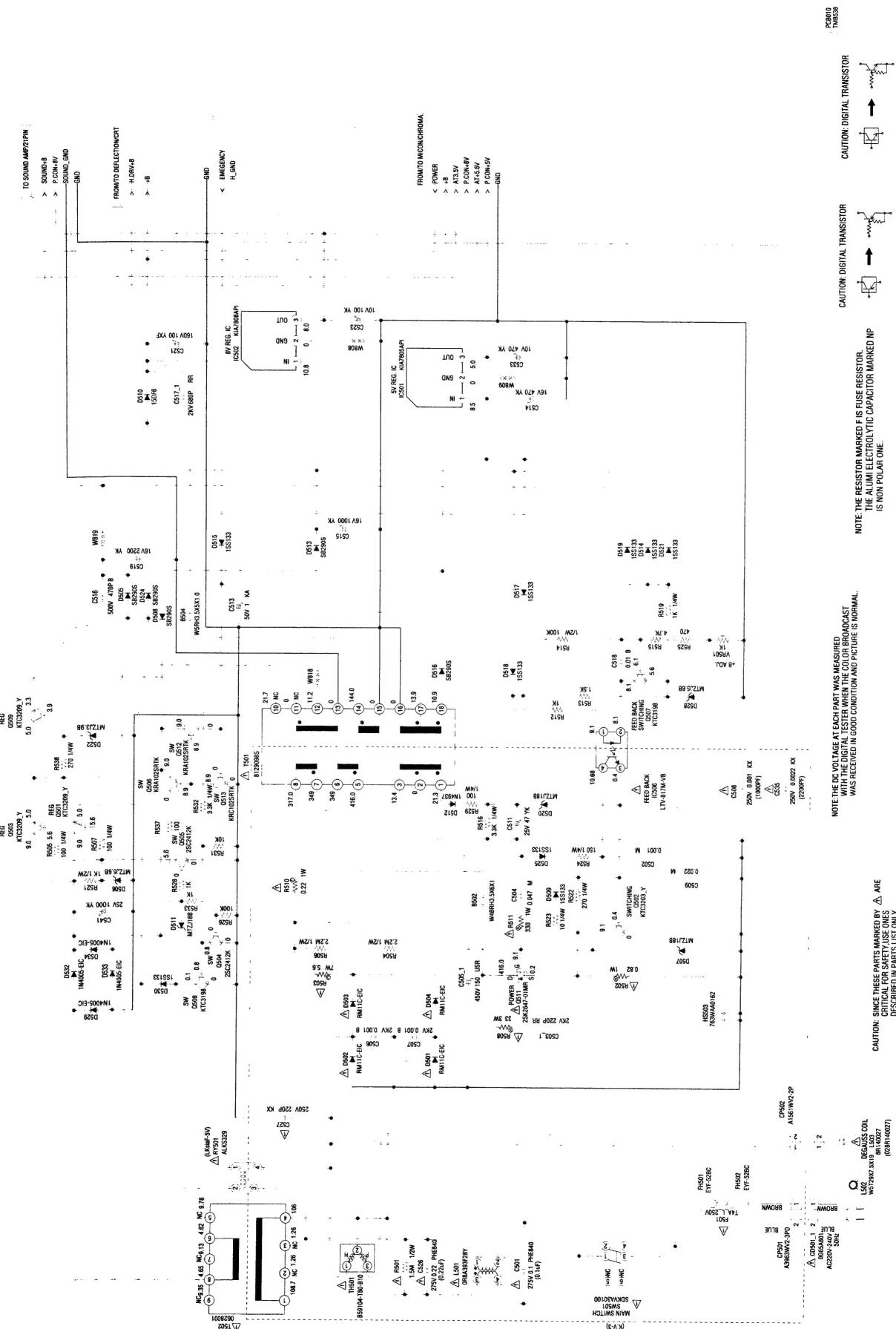


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WHEN THE IMAGE WAS FRESHER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

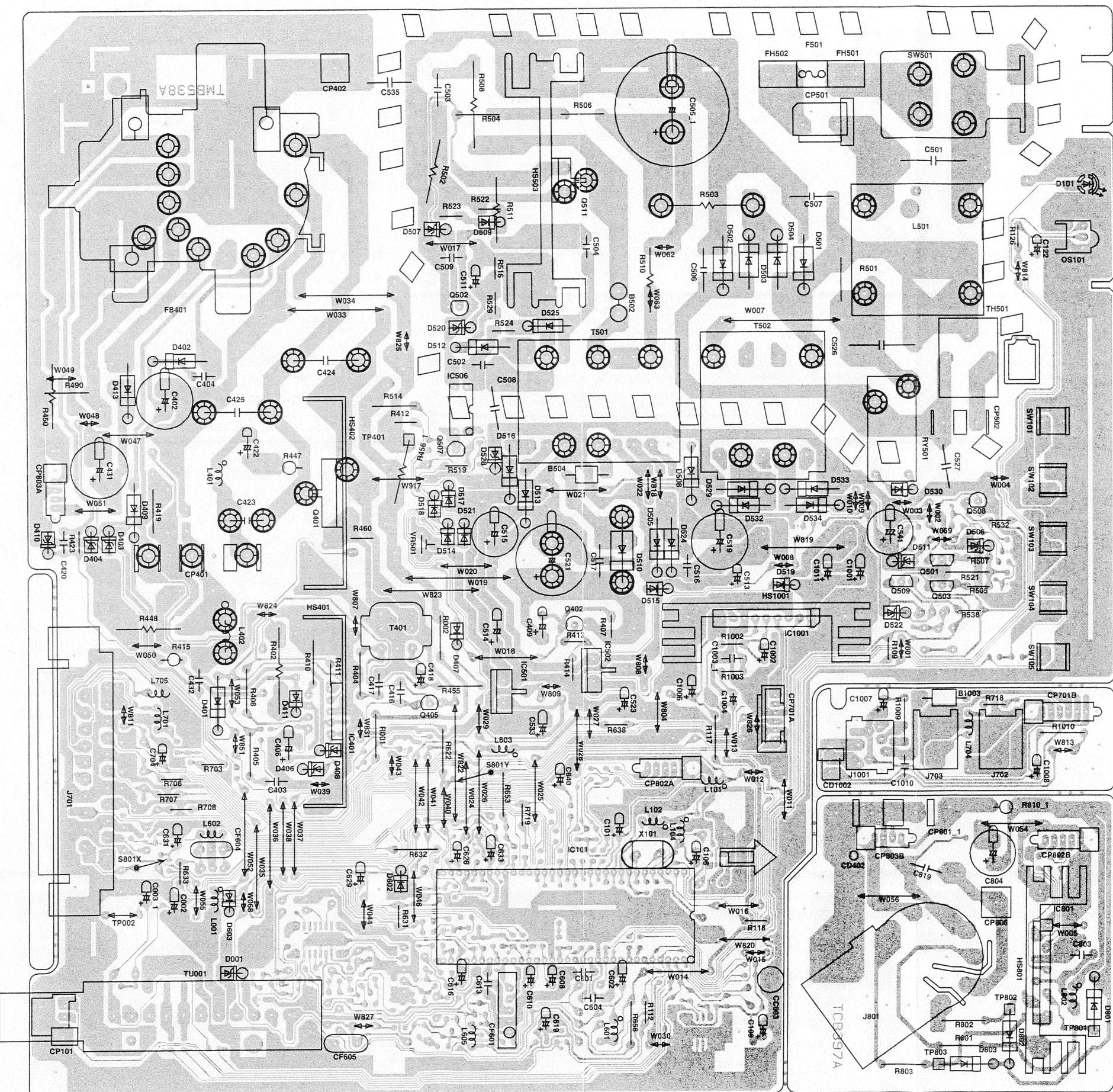
CAUTION: SINCE THESE PARTS MARKED BY \triangle ARE
CRITICAL FOR SAFETY, USE ONLY
DESCRIBED IN PARTS LIST ONLY.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR,
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR.

POWER SCHEMATIC DIAGRAM (MAIN PCB)



CRT/AV – BOARD – TOP SIDE



CRT/AV – BOARD – FOILSIDE

